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Taxonomy of the blue-crested group of *Cyanocitta stelleri* (Steller's Jay) with a description of a new subspecies

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Populations of *Cyanocitta stelleri* (Steller's Jay) that breed from Alaska to northern Mexico, as far south as Jalisco in western Mexico, and one population (*azteca*) in central Mexico, are black-crested. Blue-crested populations surrounding *C. s. azteca* breed in the mountains from southern San Luis Potosí, Guanajuato and Michoacán (Fig. 1) south to Honduras and Nicaragua. Blue- and black-crested (*azteca*) populations intergrade only in Michoacán and western Veracruz.

Blake (*in* Blake & Vaurie 1962) recognized five subspecies in the blue-crested group: *coronata* Swainson, 1827, from Guanajuato, San Luis Potosí, Hidalgo, northern Veracruz, and “(?)” Oaxaca; *purpurea* Aldrich, 1944, from Michoacán; *teotepecensis* Moore, 1955, from Guerrero; *ridgwayi* Miller and Griscom, 1925, from Chiapas to western Guatemala, El Salvador, and “(?)” Honduras; and *suavis* Miller and Griscom, 1925, from Nicaragua. An additional name, *C. s. restricta*, was

proposed by Phillips (1966) for the populations from Oaxaca. Phillips (1986) later recognized only four subspecies in the blue-crested group. He synonymized *ridgwayi* and *teotepecensis* with *coronata*. Although Phillips (1986: 45) recognized *restricta*, he concluded that its status was "problematical" because "Hidalgo birds (El Chico) . . . appear indistinguishable from Oaxaca specimens." Phillips (*in litt.*) later stated that the birds from Hidalgo "might be viewed as [the] Veracruz race [= *coronata*] somewhat paled by *diademata*" Bonaparte, 1857, a black-crested subspecies from northern Mexico, Arizona, and New Mexico. Binford (1989) synonymized *restricta* with *coronata*, but recognized *teotepecensis*.

The extent of geographic variation in the blue-crested group of *C. stelleri* (see Brown 1963) suggests that there are more subspecies than accepted by Phillips (1986). Because of this, I reevaluate the taxonomic status of the blue-crested populations. I also restrict the type locality of *coronata*.

Methods

I examined 207 blue-crested and 32 black-crested specimens of adult *C. stelleri* from Mexico south to El Salvador and Nicaragua. Birds in similar plumages were compared for variation in the intensity of blue (pale or dark) and the amount of purple on the back, undersides, and crest. The white to pale blue streaks on the front of the crest were compared for variation in colour and approximate number. I measured the wing chord and the length of the crest from the base of the exposed culmen to the tip of the longest crest feather (Tables 1 and 2). I did not measure the length of the supraloral spot and the frontal streaks on the crest as did Brown (1962). The length of the spot is subject to variation caused by differences in specimen preparation, and the beginning and ending of the streaks on the frontal crest are impossible to determine accurately. Measurements of other characters show essentially no geographic variation.

Results

Geographic variation in the blue-crested populations is most pronounced in the colour of the back and colour and length of the crest. One population of blue-crested birds and two of black-crested jays from Mexico have longer wings and crests (Tables 1 and 2) than other populations in this study. Differences between the colour of fresh and worn plumages of specimens from the same localities are slight. The few first-year birds I examined are less heavily barred with black on their wing coverts, have shorter wings, and are usually paler blue, especially below, than adults from the same populations. The taxonomic status of *C. s. coronata* and the subspecific characters of subspecies follow.

The type of locality and taxonomic status of C. s. coronata

Swainson (1827a: 437) described *coronata* as "crested, blue, sides of head blackish; chin, front, and eye-brow whitish, wing coverts and tertials banded with black lines; tail rounded." The holotype of *coronata*

is lost and Swainson's ambiguous description could apply to almost any population of *C. stelleri*, but authors as early as Jardine & Selby (1828–1830) and Bonaparte (1837) regarded the description of *coronata* as referring to a blue-crested bird. The range of *coronata* was stated by Ridgway (1873: 42) as "Vera Cruz to Honduras."

The type locality of *coronata* has been subject to controversy. Swainson (1827a) wrote that *coronata* "occurs in various parts of the Table land." The source for the specimens he reported was William Bullock, Sr., who had travelled in the states of Veracruz, Puebla and México in 1822. Ridgway (1904), followed by Hellmayr (1934), gave the type locality of *coronata* as "table lands of Mexico." Brodkorb (1944: 403) restricted the type locality of *coronata* to Real del Monte in southern Hidalgo, "a well known Bullockian locality." Davis (1945), remarking that Bullock (Sr.) did not travel in Hidalgo, restricted the type locality of *coronata* to Cofre de Perote in northwestern Veracruz. Moore (1954) stated that specimens from Real del Monte and Cofre de Perote are similar, and Miller *et al.* (1957) listed both places and did not indicate which they considered was the type locality. Phillips (1966) followed Brodkorb (1944), but later (Phillips 1986: 45) stated, without providing reasons, that the type locality of *coronata* is "probably" Cofre de Perote and that it "seems unlikely" that it is Real del Monte.

Swainson did acquire specimens from Real del Monte from William Bullock, Jr. (Swainson 1827b), who visited there and collected birds elsewhere in the table lands and in Oaxaca (Stresemann 1954). Swainson also acquired specimens from Real del Monte from John Taylor (see Browning [1989] on details of Swainson's sources of specimens from Mexico), but Swainson never associated *coronata* with that locality. However, Jardine & Selby's (1828–1830: pl. 64 and accompanying text) illustration and description of a specimen "sent by Mr. William Bullock from the table land of Mexico" are of a bird that is darker and more purple dorsally than are specimens from Real del Monte.

The only locality for which Bullock Sr. (1824) mentioned collecting jays was near Rio Frio, Puebla, but specimens from there are black-crested (Brodkorb 1944) and are referred to *azteca* Ridgway, 1899, of central Mexico. Bullock Sr. collected birds at the village of Perote, Veracruz, where he first referred to being in the table lands. Davis's (1945) specimens of *C. stelleri* from nearby Cofre de Perote are intergrades between black-crested and blue-crested populations.

The only locality Bullock Sr. actually visited that has a dark purplish-backed population of pure blue-crested *C. stelleri* is Las Vigas, Veracruz. Bullock passed through Las Vigas, spending the night in Perote. It is likely he there prepared the specimens he collected that day, labelling them all as from the "Table Land." I conclude that the type locality of *C. s. coronata* is best considered Las Vigas, Veracruz, and I hereby so restrict it.

The subspecies *coronata* is paler blue than *purpurea* Aldrich, 1944, a dark and extensively purple subspecies from Michoacán, and *teotepēcensis* from Guerrero, and is darker blue below and more purple on the back and especially the crest than other subspecies. Specimens from Cerro Conejo, San Luis Potosí, bear no resemblance (*contra* Lowery & Newman (1951)

to *teotepecensis*. The markings on the front of the crest and the crown in *coronata* are noticeably paler blue and the crown and back are more purple than in *ridgwayi* from Chiapas, Mexico and Guatemala, and *restricta* from Oaxaca. The undersides in *coronata* are darker blue and the back is darker and more purple than in *restricta*, the crest is longer than in *ridgwayi* and shorter than in *teotepecensis* (Tables 1 and 2). Specimens of *coronata* are slightly more purplish-blue on the crest and back than the 2 specimens I examined of *lazula*, a more purely blue subspecies from El Salvador.

I conclude that the range of *coronata* (number of specimens examined in parentheses) includes only northern Veracruz (7), probably northern Puebla (0), and Cerro Conejo region in southeastern San Luis Potosí (11). Intergradation between *coronata* and *azteca* occurs at La Puerta (Moore 1954), Mirador (2), Orizaba (1), and Cofre de Perote (2) in Veracruz.

Birds from southern Hidalgo are not intermediate between *coronata* and the greyish-backed and black-crested subspecies *diademata* (contra Phillips 1986). Specimens from Real del Monte, Hidalgo, are slightly paler on the back than *coronata* from Veracruz, and birds from nearby El Chico, Hidalgo, are still paler and are less purple dorsally than those from Real del Monte. I conclude that specimens from southern Hidalgo are similar to *coronata* but tend toward paler specimens from northern Hidalgo, Guanajuato, and Cañada Grande in southwestern San Luis Potosí. Pale specimens from Xichú, Guanajuato, reported by Moore (1954), and from Cañada Grande, San Luis Potosí, by Phillips (1986), were identified by those authors as *coronata*. However, the pale northern population is distinguishable from the adjacent subspecies *coronata* and from the geographically disjunct subspecies *restricta*. The northern blue-crested population is here named

***Cyanocitta stelleri phillipsi*, subsp. nov.**

Holotype. LSUMZ 15483, adult male, Cañada Grande (7 miles SE by road), San Luis Potosí, Mexico. Elevation 7400 feet. Collected 8 May 1950 by Robert J. Newman, original number 1880.

Diagnosis. Similar to *coronata* in size but noticeably paler and duller blue above and below; almost lacks purple colour on the back, crest, and upper breast; pale markings on the front crest appear to extend farther distally. Darker blue above and below and less purple than *restricta*. The contrast between the colours of the back and crest is greater in *phillipsi* than in the other blue-crested subspecies. Compared to *diademata*: crest blue (not black); overall bluish (less greenish) plumage; shorter wings and crest.

Measurements of the holotype (mm). Wing chord 145.7, tail 139.8, crest length 57.5.

Distribution. Cañada Grande, San Luis Potosí (6 specimens), Xichu, Guanajuato (4), and Encarnación, Hidalgo (1). Specimens from El Chico (2) and Real del Monte (2), Hidalgo, are *phillipsi* > *coronata*.

Etymology. Named for Allan R. Phillips, in recognition of his numerous contributions on the taxonomy and distribution of birds from North and Middle America.

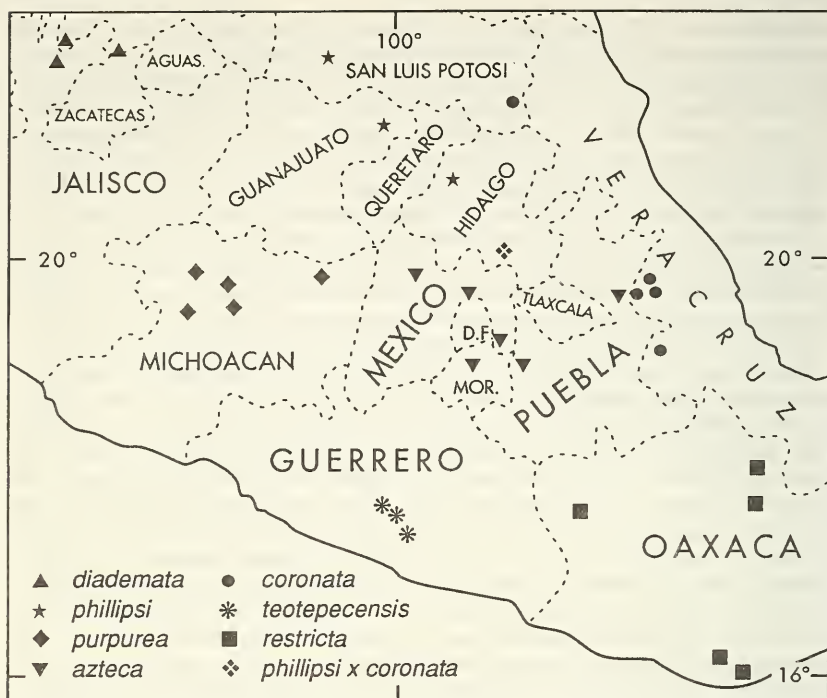


Figure 1. Localities of specimens examined of *Cyanocitta stelleri* from central Mexico.

Remarks. The specimen from Encarnación was collected in October; all other adult specimens of *phillipsi* were collected in April and May. One first-year bird from Cañada Grande is slightly pale but otherwise resembles the adults from the same locality. A first-year female collected at El Lobo, Querétaro, at 5400 feet, in January, is darker blue than a first-year bird from Cañada Grande. The specimen from Querétaro resembles a first-year bird from Veracruz but it is deeper blue, especially below.

Other recognized subspecies

In addition to *coronata* and *phillipsi*, I recognize six subspecies in the blue-crested group of *C. stelleri* (Fig. 1). The ranges (specimens examined in parentheses) and subspecific characters of these and the two black-crested subspecies from Mexico are as follows:

C. s. ridgwayi. This subspecies differs from *coronata* as previously characterized. It is similar to *restricta* in the amount of white on the throat, but *ridgwayi* differs in its darker blue plumage and bluer (less whitish) crest streaks. Resident in Chiapas (24) and Guatemala (56).

The name *galeata* Cabanis, 1851, synonymized by Ridgway (1899, 1904) with *coronata*, was based on a specimen with the locality "St Fe" de

TABLE 1
Wing chord and length of crest in adult male *Cyanocitta stelleri*

Subspecies	Wing chord			Crest length		
	range	mean, s.d.	n	range	mean, s.d.	n
<i>azteca</i>	147.5–152.3	149.5	6	65.6–71.6	68.8	6
<i>diademata</i>	140.4–150.9	146.0	5	62.4–72.1	65.9	6
<i>phillipsi</i>	139.9–145.7	142.7	6	57.5–63.3	60.3	6
<i>coronata</i>	137.8–148.2	144.2, 3.14	10	58.6–66.1	61.1, 3.10	9
<i>restricta</i>	137.0–150.4	142.6, 4.43	10	57.4–67.2	62.6, 3.68	11
<i>purpurea</i>	145.2–155.3	149.2	5	60.2–74.9	69.9	6
<i>teotepecensis</i>	137.0–150.4	142.6, 4.43	10	61.3–73.8	67.4, 4.07	11
<i>ridgwayi</i> :						
Chiapas	135.4–151.1	145.8, 4.07	15	49.0–62.2	56.2, 3.71	15
Guatemala	136.3–148.0	142.7, 3.92	11	52.7–64.1	57.5, 3.60	11
<i>suavis</i>	137.0–151.6	143.1, 3.77	13	53.8–66.6	57.9, 2.22	12
<i>lazula</i>	150.4		1	58.2		1

TABLE 2
Wing chord and length of crest in adult female *Cyanocitta stelleri*

Subspecies	Wing chord			Crest length		
	range	mean, s.d.	n	range	mean, s.d.	n
<i>azteca</i>	144.2–152.0	147.9	4	63.0–69.9	66.4	5
<i>diademata</i>	138.3–143.7	141.1	6	62.3–66.8	65.9	6
<i>phillipsi</i>	135.5–142.8	139.5	4	56.8–64.2	61.5	4
<i>coronata</i>	137.9–148.0	142.5, 2.96	9	58.2–64.4	60.9, 2.40	9
<i>restricta</i>	135.6–144.5	139.2	3	51.4–63.1	57.1	3
<i>purpurea</i>	133.0–141.6	138.7	5	61.2–69.0	65.7	5
<i>teotepecensis</i>	134.4–146.7	140.6, 4.50	9	59.2–68.0	62.4, 2.98	9
<i>ridgwayi</i> :						
Chiapas	137.7–145.2	141.6, 2.58	9	51.9–57.8	54.3, 1.94	9
Guatemala	135.7–145.2	140.3	7	51.3–57.9	54.3	7
<i>suavis</i>	136.2–149.9	144.1	5	55.7–59.0	57.3	5
<i>lazula</i>	137.2		1	58.3		1

Bogata.?’ Two specimens (4697, male and 4698, female ?) in the Museum Heineanum are identified as *Cyanocitta galeata*, one of which is the holotype (B. Nicolai, *in litt.*). Nicolai characterized the two specimens as having a shorter crest than *coronata* and plumage colour as *ridgwayi*. The name *galeata* is a *nomen oblitum*.

C. s. suavis. This subspecies differs from *ridgwayi* by its paler blue plumage, with a greater contrast in colour between the back and crest, and less white on the chin. Resident in Nicaragua (15) and Honduras (9). I agree with Monroe (1968) that birds from Honduras do not intergrade (*contra* Blake *in* Blake & Vaurie 1962) with *ridgwayi*.

C. s. lazula. The two specimens examined are darker and more purely blue than specimens of *suavis* or *ridgwayi*. Resident in El Salvador (2). Tashian (1953) stated that *lazula* did not appear separable from *ridgwayi*, and Blake (in Blake & Vaurie 1962) and Monroe (1968) synonymized *lazula* with *ridgwayi*. Others (e.g. Dickey & van Rossem 1938, Rand & Traylor 1954, Phillips 1986) recognized *lazula* as a distinct subspecies. I tentatively recognize *lazula*.

C. s. purpurea. This subspecies is much darker and more extensively purple on the crest, back and upper breast than the other blue-crested subspecies. The crest streaks are less bluish in *purpurea* than in *teotepecensis*. It is similar to *azteca* in wing chord and in the length of the crest (Tables 1 and 2). Resident in western and central Michoacán (15). Intergrades with black-crested *azteca* in north-central Michoacán (Blake & Hanson (1942).

C. s. teotepecensis. Specimens of *teotepecensis* are paler blue and less dark purple than in *purpurea*. Birds from Guerrero differ from *restricta* by their darker colouration, less white on the chin, and longer and less heavily marked crests. Resident in central and southern Guerrero (23).

C. s. restricta. This subspecies differs from *coronata* and *phillipsi* as previously characterized. *Cyanocitta s. restricta* differs from *teotepecensis* in being paler blue below and in the more extensive and paler blue markings on the front of the crest. The crest is shorter than in *teotepecensis* and longer than in *ridgwayi* (Tables 1 and 2). The more extensive white on the chin resembles that in *ridgwayi*. Resident in Oaxaca (28). Morphological differences between specimens from Oaxaca and other populations were reported by several authors (e.g. Hellmayr 1935, Brown 1962) before Phillips (1966) proposed the name *restricta*.

C. s. azteca. This black-crested subspecies is purplish-blue dorsally. Resident in the states of México (9), Distrito Federal (9), Morelos (2), Puebla (2), and west-central Veracruz (5).

C. s. diademata. This black-crested subspecies is greyish dorsally. From southeastern Sonora (2) and extreme southwestern Chihuahua (6) to Durango (1), Jalisco (2), Zacatecas (2), and Cerro Potosí, Nuevo León.

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